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Note on *Bironella* (*Brugella*) *hollandi* Taylor

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NOTE ON *BIRONELLA (BRUGELLA) HOLLANDI* TAYLOR

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Summary

The Anopheline genus *Bironella* has its centre of distribution in New Guinea. *Bironella (Brugella) hollandi* Taylor was described from Kavieng, New Ireland, and has the most easterly distribution of any member of the genus. The following note records its known distribution in the Solomon Islands, and gives some information on its biology and a description of the egg.

IDENTITY

SPECIMENS from the Solomons were found to fit the description of *B. hollandi* fairly closely. Mr. D. J. Lee kindly supplied drawings of the male genitalia of the type which confirmed the identification as *hollandi*. A male reared from the egg at Vella Lavella was found to be identical in male genitalia with males from Banika and Guadalcanal.

DISTRIBUTION

This species was first taken in the Solomons by Major W. G. Downs, United States Army Medical Corps, on Banika Island, in the Russell Group. The writer also secured specimens from Banika and later found the species to be common in jungle streams on Guadalcanal. It was later taken in Vella Lavella, and specimens from Mono Island in the Treasury Group were seen. Major Downs later reported it from New Georgia and Bougainville. No sign of it was seen on Nissan or Green Island, where there was no suitable water.

It is thus recorded from a chain of islands from New Ireland to Guadalcanal, and it is quite likely that it will be found on some of the larger islands of the lower Solomons, such as Malaita and San Cristobal. The writer saw no sign of it on Efate Island, New Hebrides, nor was it reported by American entomologists from Espiritu Santo, farther north. The limit of its distribution therefore does not reach as far south as that of *B. gracilis*, which reaches Cairns, in Queensland.

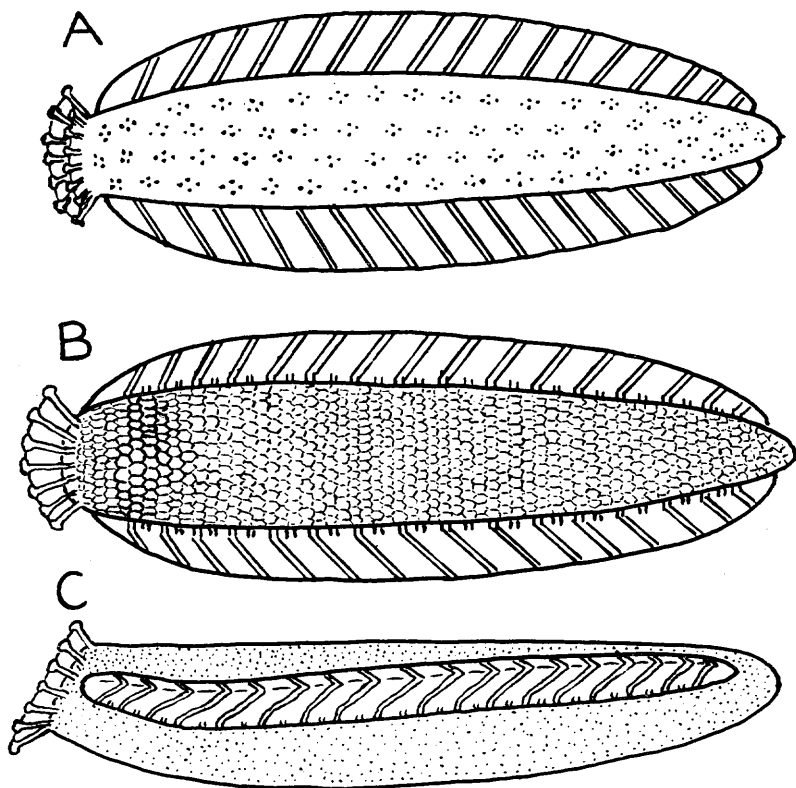


FIG. 1.—*Bironella (Brugella) hollandi* Taylor. Egg: A, dorsal; B, ventral; C, lateral.

BREEDING-PLACES

This is characteristically a jungle species, found in dark jungle streams on Guadalcanal, Banika, and Vella Lavella, &c. In these locations it was usually much more abundant than *Anopheles punctulatus* var. *moluccensis*. It was taken in swampy streams containing taro, in an open coconut plantation not far from the jungle edge, and also in still seepage pools or springs in a Native garden in the jungle. In several cases it was abundant where the streams had been dammed up at the jungle edge, particularly amongst floating debris of leaves, twigs, &c. It was taken in sluggish streams, but also in the quieter eddies of a fairly swift jungle stream on Guadalcanal. It occurred in jungle-covered streams on the flats and also in deep ravines in hilly country.

LIFE-CYCLE

Laboratory rearings on Vella Lavella of eggs collected in the field from a swampy patch in a native garden at Joroveto gave the following results :—

	Days.
Incubation period (estimated)	3
Larval period (estimated)	19
Incubation and larval period observed (eight specimens)	22
Pupal period observed (five specimens)	1.8
Total period, oviposition-emergence (five specimens)	23.8
Minimum period, oviposition emergence	22
Maximum period, oviposition emergence	26

These larvæ were kept in a beaker in the laboratory and fed on chopped flies and powdered biscuit.

Two *Anopheles punctulatus* var. *moluccensis* eggs collected at the same time and reared in the same way produced adults in fifteen and eighteen days respectively. Under the same conditions it appears that the life-cycle of *B. hollandi* is significantly longer than that of *moluccensis*.

HABITS

This species was never taken biting man, nor was it caught in night-catches or light traps, and was never found in tents. The only adults seen were those which were reared. Laboratory-reared specimens showed no inclination to bite man, though every endeavour was made to make them do so. They fed readily on glucose solution.

RELATION TO HUMAN MALARIA

Owing to its habit of not frequenting dwellings, it is presumed to be unimportant as a vector of human malaria. The presence of this species on Guadalcanal led to the beginnings of species sanitation, in that the dark jungle streams entering the foothills supported predominantly *B. hollandi* and could be largely disregarded as a source of malaria vectors.

MORPHOLOGICAL

Lee and Woodhill, in their revision of the Australian *Anophelini*, have described the species. The larva, in life, is usually a deep black, much blacker than *moluccensis*. The fourth abdominal segment is white or unpigmented and in strong contrast to the body colour. The larvæ of *moluccensis* when they show a white band, and it is frequently difficult to discern, have it on the third abdominal segment. This difference, which was first noted by Major Downs, was useful in rapid identification of larvæ in the field, since the white band in *B. hollandi* appears to be behind mid-length, while in *moluccensis* it is at or before mid-length.

THE EGG

This has been figured by Lee and Woodhill, but their figure, probably due to inadequate material, fails to show the striking characters of the floats, in particular. The following description is made from eggs collected at Joroveto, Vella Lavella, and preserved on filter paper moistened with formalin :—

	Mm.
Length, including rosette (mean of eight eggs)	0.52
Length, without rosette	0.48
Greatest width of egg proper	0.11
Width of float	0.04
Depth of egg	0.09

The *floats* extend nearly the full length of the egg. In transverse section they are V shaped with the dorsal arm of the V nearly horizontal and its point of attachment to the egg nearer to the mid-dorsal line than that of the ventral arm, which is at the angle of 50–60° to the horizontal and is inflexed just before the point of attachment. The ribs are about sixteen in number, and on the dorsal surface of the float form a parallel series of straight ribs running in a postero-lateral direction from the inner margin of the float. This is in contrast to the eggs of many other anophelines, in which the floats are rounded and not angled and the ribs are radially arranged on either side of the mid-length of the float. On the ventral surface the ribs are continuous with those of the dorsal surface and form a parallel series with an inflexion before the point of attachment. Between the origins of the ribs at the ventral point of attachment are short ribs which do not extend beyond the outer margin of the inflexed portion of the ventral surface of the float. In lateral view the ribs are V shaped with the base of the V anterior.

SCULPTURE

Dorsally the surface of the egg proper shows a pattern of relatively large papillæ grouped in fours and fives. Ventrally the surface of the egg is hexagonally reticulate. On the anterior or micropylar end of the egg enclosed by the rosette are about six papillæ. A conspicuous crown or rosette forms a cup-like structure enclosing the micropylar area. It consists of about twelve ribs, the distal ends of which are capitate (and crenulated?). Between the ribs is a membrane which encloses the cup. Ventrally the ribs are longer and their bases nearer to the anterior end of the egg.

REFERENCE

- LEE, D. J., and WOODHILL, A. R. (1944): The Anopheline Mosquitoes of the Australian Region. *Sydney Univ., Dept. Zoology, Monograph No. 2.*

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